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10/628,420

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Thomas Lee

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EXAMINER

CHAWLA, JYOTI

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/628,420	Applicant(s) LEE ET AL.	
	Examiner Jyoti Chawla	Art Unit 1761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 21, 2007 has been entered. Claims 23-27, 31, 32 have been amended, and claims 39-40 have been added. Claims 23-40 are pending and examined in the application.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejection of claims 23-38 under 35 U.S.C. 112, second paragraph, for not providing a unit for the amount of acids recited in the claims has been withdrawn in light of applicant's amendments.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Determining the scope and contents of the prior art.

Ascertaining the differences between the prior art and the claims at issue.

Resolving the level of ordinary skill in the pertinent art.

Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(A) Claims 23-30, 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (US 4830862) in view of combination of Van Ness (US 3245798) and Nakel et al (US 4551342).

Regarding claim 23-28 and 35-36, Braun et al, hereinafter Braun, teaches a beverage composition with acid component comprising citric, phosphoric and adipic acids and the salts including citrate and phosphate salts (Column 5, lines 53-68). Braun teaches beverages or soft drinks with lemon-lime and cola flavors (Column 8, line 58 and Column 9, lines 7-10) as recited in claim 23, 24, 37, 38, 39 and 40. Braun teaches that the mixtures of acids total acid component of the beverage concentrate ranges from 1.2 to 20% by weight and for other beverages the total acids can be in the 0.6 to 2% (Column 6, 1-26). The reference further teaches lemon-lime beverage citric acid 3.75 /1500 grams and 1.3/1000 grams, i.e., 0.13-0.25% acid by weight as recited in claim 27 and 28. Braun is silent as to the specific amount of adipic acid in a lemon-lime beverage.

Thus adipic acid was known as the acidic component of a lemon/lime flavored carbonated beverage (Braun). Therefore one of ordinary skill would have been motivated to look to the art for the specific amounts of adipic acid the a re desirable to add in a lemon/lime flavored beverage. Van Ness teaches that adipic and or fumaric acid can be made soluble by the addition of surfactants and can be used in place of citric acid or in addition to the citric acid (Column 1, lines 15-70) to make the beverages.

Nakel et al, hereinafter Nakel, teaches beverages and beverage concentrates with improved flavor, desirable sweetness and sourness that could be controlled over a wide range of pH (column 2, lines 1-49) and the concentrates taught are storage stable and without the off flavors due to the insoluble salt formation on storage. The beverages taught by Nakel can be made as carbonated and noncarbonated, with various flavors and blended flavor components including cola, lemon and lime etc., and blends thereof (column 5, line 47 to column 6, line 15) and containing acidulants like citric acid and phosphoric acid. Nakel also teaches addition of calcium, potassium and magnesium and other cations like sodium and ammonium in smaller amounts as acid salts i.e., as citrates, malates and phosphates to the beverage and beverage concentrates taught (column 6, lines 50-62 and column 4, line 63 to column 5, line 10) and (column 2, lines 14-20; column 7, lines 1-14; Column 10-13, Embodiments 1-9 and summary table). Nakel, further teaches that the amount of citric acid in the beverage could vary between 0.06- 0.96% and the reference also teaches of a mixture of cations like Calcium, Phosphorus, Magnesium, sodium and ammonium as citrates, malates, phosphates and dihydrogen phosphates among other forms to provide the right pH and appropriate flavor note in conjunction with the acid (Column 6, lines 50-62) as recited in claims 27-30. Also see (column 1, lines 13-14 and Column 5, line 47 to column 6, line 15). Nakel teaches beverages and beverage concentrates with the organic acid and citric acid, and gives formula to determine the total acidity of the drink and that by varying the amounts of one or more of the acids, it can be determined whether the acid number of the beverage, which in turn would determine the acceptability of the beverage (column 8, line 48 to column 9, line 17). The formula taught is:

$$(8.7.\text{times.cit})+(8.9.\text{times.mal})+(11.4.\text{times.phos})+(5.5.\text{times.cit.times.mal}) - \\ (0.6.\text{times.cit.times.phos})+(5.0.\text{times.mal.times.phos})+(30.1.\text{times.cit.times.mal.times.phos})=A$$

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wherein cit is the weight ratio of citric acid in the acid component, mal is the weight ratio of malic, succinic or a mixture of malic and succinic acid, phos is the weight ratio of phosphoric acid, and A is from about 9.6 to about 12.1.

The formula assumes malic acid as the organic acid, however any other compatible organic acid could also be used. According to the formula if the resulting acid number (A) falls within 9.6 and 12.1, the beverage would have a desirable acid level. Therefore, it would be obvious to one of ordinary skill at the time of the invention to experiment with the relative amounts of acids and salts in order to find various combinations of salts and acids within the acceptable acid number range as taught by Nakel. Therefore it would have been obvious to one of ordinary skill at the time of the invention to modify beverage composition as taught by Braun and vary the amount of citric acid and other organic acid in order to determine the total acidity of the beverage. If the ratio of organic acid: citric acid is taken as 1:3 or 1:4 as recited by the applicant in claims 23 and 25 respectively and plug in the numbers in the formula where amount of phosphoric acid is zero and organic acid : citric acid is 0.25:0.75 (i.e., 1:3 ratio) and 0.2:0.8 (i.e., 1:4 ratio) respectively. After plugging in the numbers

<u>Ratio</u>	<u>Substitution in Formula</u>	<u>Solution</u>
1: 3-	$(8.7 \times 0.75) + (8.9 \times 0.25) + (5.5 \times 0.75 \times 0.25)$	= 9.78
1: 4-	$(8.7 \times 0.80) + (8.9 \times 0.2) + (5.5 \times 0.80 \times 0.2)$	= 9.62

Both the above ratios have been recited by the applicant as acceptable acid ratios and their results fall within the accepted acidity range (A) of 9.6 to 12.1 as taught by Nakel.

From the discussion above, it is evident that it had been known in the art to add adipic acid to a beverage either in addition or in place of citric acid (Braun and Van Ness). Adipic acid has a smaller dissociation constant as compared to citric acid (Evidenced by Environmental Contaminant Reference Data book). Organic acids in various combinations can be used to make a stable beverage if the total acidity is in the range taught by the formula of Nakel. Therefore it would have been obvious to one of ordinary skill in the art to modify the lemon-lime or cola beverage taught by Braun to contain

adipic acid in any ratio desirable, while keeping the total acid of the beverage in the desired range using the formula taught by Nakel. One would have been motivated to do so in order to make the beverage concentrate as a adequately acidic and has high acceptability. One would have been further motivated to use adipic acid in the beverage composition as adipic acid is less hygroscopic than other food acids including citric and phosphoric acids and it does not absorb moisture from the atmosphere, thus the beverage dry concentrate would remain free-flowing, easily transportable with longer shelf-life

Thus, the invention as claimed would have been obvious over Braun in view of combination of Van Ness and Nakel, absent any clear and convincing evidence and/or arguments to the contrary.

Regarding claims 24 and 26 recite the ratio range of organic to phosphoric to citric acid in a beverage is 3.0 - 4.0: 1.4 - 2.0: 1.0 in claim 24 and 3.3 - 3.7: 1.6 - 1.8: 1.0 in claim 26 respectively. Braun is silent as to the ratio of the organic acids, Nakel teaches beverages and beverage concentrates with the recited organic acid, phosphoric acid and citric acid and as discussed above Nakel also teaches a formula to determine the total acidity of the drink (column 8, line 48 to column 9, line 17). Nakel teaches a ratio of 3.6: 1.4:1.3 in embodiment 2 (column 1, lines 15-30) which falls within the recited range of the applicant for the amount of organic acid and phosphate, however Nakel has a little more citric acid in proportion. Nakel also teaches that by adjusting the concentration of acids in relation to the cations or buffer salts, it is possible to alter the pH and sourness in the flavor of the resulting beverage (column 9, lines 10-17). Therefore, it would have been obvious to the one with ordinary skill in the art at the time of the invention to modify Braun based on the teachings from Nakel and include the amount of citric acid in the beverage of Embodiment 2 or vary slightly as long as the total acidity remains in the acceptability range as taught by Nakel because Embodiment 2 taught by Nakel is an example of the various acid combinations possible in preparing a beverage with low pH and Nakel also teaches that the amount of acid components can be adjusted to be used in combination with various cation salts or buffer salts in

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order to alter the flavor to desired level, i.e., sourness, tartness, delayed or lingering sourness etc.

While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor (Braun, Van Ness and Nakel). Therefore, it is not seen how the specific ratios claimed by the applicant would create an unexpected result, absent any clear and convincing evidence and arguments to the contrary.

Regarding claim 29 and 30, Braun teaches calcium salts of acids like citrate and phosphate to the beverages in the form of mono-, di-, tri ionic forms, i.e., calcium phosphate, calcium hydrogen phosphate and calcium dihydrogen phosphate, (Column 5, lines 5-15) as recited by the applicant.

Regarding claims 33-36 Braun is silent about the combined amount of citrate and phosphate salts present in the beverage where two or more acidulants are being used. Nakel teaches the citrate and phosphate salts as the cation component. Nakel teaches that the cation component for a liquid carbonated beverage ranges between 0.1-0.6% by weight which falls in the range recited by the applicant in claims 33-36. Nakel also provides general formulas that can be used to determine the right amount of total cations in the beverage in proportion to the acidulants (edible acids) and vice versa to give a general idea of an acceptable range for acid and cation for any beverage flavor taught.

(B) Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (US 4830862) in view of combination of Van Ness (US 3245798) and Nakel et al (US 4551342) as applied above further in view of Lee et al (US 5348756).

Claims 31 and 32 recite the ratio of citrate and phosphate salt. Braun teaches that the level of total acids in the beverage depends on the beverage composition, level of calcium based salts, mouthfeel, taste and stability desired and for beverages that do not

contain fruit juice can have the acid range of 0.2-5% by weight, which is different from fruit juice based beverages (Column 6, lines 1-26).

Nakel, teaches the use of mixtures of calcium salts in the beverages which, act as buffers, can be present in the beverage composition either as carbonates, hydroxides, bicarbonates or sour salts (citrates etc.). However, both Braun and Nakel are silent as to the exact proportion of these salts in the beverage composition taught.

Lee makes gelatin gels in flavors and adds buffering salts to neutralize the acidity of citric and adipic acids with soluble phosphate and citrate salts at a ratio of 0.9-2: 1 and preferably of 1-1.5: 1 (column 2, lines 34-49). The range of the buffer salt ratio taught by Lee includes the ratios recited by the applicant in Claims 31 and 32.

Thus the addition of salts of calcium sodium and /or potassium have been known additives to the beverages. The amount of these salts in a beverage in the recited range of the applicant has also known (Lee). Therefore, it would have been obvious to the one of ordinary skill in the art at the time of invention to modify Braun to include a specific ratio range of the cation / buffer salts used in the beverage as taught by Lee. One would have been motivated to do so in order to provide a balanced composition with desirable tartness and flavor to the finished product.

While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor. Therefore, it is not seen how the specific ratios claimed by the applicant would create an unexpected result, absent clear and convincing evidence and arguments to the contrary.

### ***Response to Arguments***

Applicant's arguments filed March 21, 2007 have been fully considered but they are not persuasive.

i) Applicants argument that Braun , Van Ness and Nakel do not teach the claimed invention as the references teach beverage concentrates which is not the claimed invention is not persuasive. In response to applicant's argument that the reference employed are non-analogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the

particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In the present instance Braun (Abstract, Column 1, line 1, Column 3, line 11), ~~where the reference~~ clearly discloses beverages and beverage concentrates. It is further noted that Braun defines beverages as single strength, ready to serve, drinkable form as is instantly claimed.

ii) Braun also teaches addition of adipic acid to the beverage composition. The reference also teaches of selection of acid systems to provide desired tartness or sourness character to the beverage or the concentrate (Abstract and Columns 1 and 2).

iii) Regarding the details of the invention as provided by the applicant on pages 5-6 and also page 7 of remarks, the applicant is referred to Braun where the reference teaches the combination of tartness and buffering action of citric and phosphoric acids as instantly argued.

iv) In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

v) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., while lemon lime beverages become more stable at higher pHs, the tartness of higher pH beverages is unacceptable compromised.) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

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Thus applicant's arguments have not been found persuasive and claims 23-40 remain rejected for the reasons of record.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Chawla whose telephone number is (571) 272-8212. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jyoti Chawla  
Examiner  
Art Unit 1761

  
**KEITH HENDRICKS**  
**PRIMARY EXAMINER**